

Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of the claims in the application:

Claims 1-27 have been previously cancelled.

Claims 64 and 65 are cancelled by this amendment.

1 28. (Original) A method of providing a multi-layer semiconductor structure, the method  
2 comprising:  
3 providing a first semiconductor structure having first and second opposing surfaces; and  
4 disposing a laminate layer over a first one of the first and second opposing surfaces of  
5 the first semiconductor structure to provide a first semiconductor structure having a laminate  
6 layer disposed thereon.

1 29. (Original) The method of claim 28 further comprising:  
2 disposing a handle member over the laminate layer.

1 30. (Original) The method of claim 29 further comprising:  
2 a substrate on a second one of the first and second opposing surfaces of the first  
3 semiconductor structure.

1 31. (Original) The method of claim 30 further comprising:  
2 removing at least a portion of the substrate from the second one of the first and second  
3 opposing surfaces of the first semiconductor structure to provide a semiconductor-handle  
4 complex.

1 32. (Original) The method of claim 31 further comprising:  
2 providing a second semiconductor structure); and  
3 aligning a first surface of the semiconductor-handle complex with a first surface of the  
4 second semiconductor structure.

1 33. (Original) The method of claim 32 further comprising:  
2 bonding the first surface of the second semiconductor structure to the first surface of  
3 the semiconductor -handle complex.

1 34. (Original) The method of claim 33 further comprising:  
2 removing the handle member and the laminate layer.

1 35. (Original) The method of claim 28 wherein providing a first semiconductor structure  
2 having first and second opposing surfaces comprises:  
3 a substrate having first and second opposing surfaces; and  
4 a first semiconductor structure over a first one of the first and second surfaces of the  
5 substrate.

1 36. (Currently Amended) The method of claim ~~29~~28 wherein providing a first  
2 semiconductor structure having first and second opposing surfaces comprises:  
3 providing a semiconductor structure comprised of a plurality of thin film semiconductor  
4 layers.

1 37. (Original) The method of claim 29 wherein disposing a handle member over the laminate  
2 layer comprises:  
3 providing a handle substrate;  
4 disposing a film layer over at least one surface of the handle substrate.

1 38. (Original) The method of claim 37 wherein the film layer is provided from one of: silicon  
2 nitride; and silicon dioxide.

1 39. (Original) The method of claim 38 further comprising disposing a laminate over a surface  
2 of the handle member.

1 40. (Original) The method of claim 29 wherein disposing a handle member over the laminate  
2 layer comprises disposing a handle member over the laminate layer such that a surface of the  
3 laminate adheres to a surface of the handle member.

1 41. (Original) The method of claim 29 wherein disposing the laminate layer over a first one of  
2 the first and second opposing surfaces of the first semiconductor structure to provide a  
3 semiconductor structure having a laminate layer disposed thereon comprises providing a  
4 laminate layer comprised of a plurality of layers.

1 42. (Original) The method of claim 41 wherein providing a laminate layer comprised of a  
2 plurality of layers comprises:  
3 providing a first layer corresponding to a release layer;  
4 providing a second layer corresponding to a metal adhesion / diffusion barrier layer;  
5 and  
6 providing a third layer corresponding to a fusion layer.

1 43. (Original) The method of claim 42 wherein the release layer comprises at least one of  
2 zirconium and aluminum.

1 44. (Original) The method of claim 42 wherein the metal adhesion / diffusion barrier layer  
2 comprises tantalum.

1 45. (Original) The method of claim 42 wherein the fusion layer comprises at least one of  
2 copper; a polymer; and an inorganic dielectric.

1 46. (Original) The method of claim 41 wherein providing a laminate layer comprised of a  
2 plurality of layers comprises:  
3 providing a first layer corresponding to a metal adhesion / diffusion barrier layer;  
4 providing a second layer corresponding to a release layer; and  
5 providing a third layer corresponding to a fusion layer.

1 47. (Original) The method of claim 46 wherein the release layer comprises at least one of  
2 zirconium and aluminum.

1 48. (Original) The method of claim 46 wherein the metal adhesion / diffusion barrier layer  
2 comprises tantalum.

1 49. (Original) The method of claim 46 wherein the fusion layer comprises at least one of  
2 copper; a polymer; and an inorganic dielectric.

1 50. (Original) The method of claim 41 wherein providing a laminate layer comprised of a  
2 plurality of layers comprises providing a laminate layer comprised of two layers with a first  
3 one of the layers corresponding to a release layer and second one of the layers corresponding  
4 to one of:  
5 a polymer having an adhesive characteristic which allows the laminate layer to adhere

6 to the surface of the thin film semiconductor structure;  
7 an inorganic material; and  
8 copper.

1 51. (Currently Amended) The method of claim 2829 wherein disposing a laminate layer  
2 comprises providing a laminate layer comprised of a single layer having an adhesive  
3 characteristic which allows the laminate layer to adhere to the surface of the semiconductor  
4 structure and having a characteristic such that the layer releases from the surface of the  
5 semiconductor structure in response to being exposed to a release agent.

1 52. (Original) The method of claim 29, wherein disposing a laminate layer comprises providing  
2 a laminate layer comprised of a single layer having an adhesive characteristic which allows the  
3 laminate layer to adhere to a surface of the handle member and having a characteristic such that  
4 the layer releases from the surface of the semiconductor structure in response to being exposed to  
5 a release agent.

1 53. (Original) The method of claim 31, wherein removing the substrate from the second one of  
2 the first and second opposing surfaces of the semiconductor structure to provide a  
3 semiconductor-handle complex comprises removing a portion of the second surface of the  
4 semiconductor-handle complex using at least one of: a mechanical grindback, an aqueous  
5 chemical etch; a vapor chemical etch; and a plasma etch.

1 54. (Original) The method of claim 33, wherein bonding the first surface of the second  
2 semiconductor structure to the first surface of the semiconductor-handle complex comprises  
3 providing bonding pads on at least one of the first surface of the second semiconductor  
4 structure; and the first surface of the semiconductor-handle complex.

1 55. (Original) The method of claim 54, wherein the bonding pads are provided from at least  
2 one of: copper; a polymer; and an inorganic dielectric.

1 56. (Original) The method of claim 34 wherein removing the handle member and the laminate  
2 layer comprises using at least one of:  
3 an aqueous-activated method;  
4 a vapor-activated method;

5 a light-activated method;  
6 a temperature-activated method;  
7 an ion bombardment-activated method;  
8 an electrically-assisted method; and  
9 a mechanical method.

1 57. (Currently Amended) The method of claim 2928 wherein the semiconductor structure  
2 corresponds to a die-to-die semiconductor structure.

1 58. (Currently Amended) The method of claim 2928 wherein the semiconductor structure  
2 corresponds to a die-to-wafer semiconductor structure.

1 59. (Currently Amended) The method of claim 2928 wherein the semiconductor structure  
2 corresponds to a wafer -to-wafer semiconductor structure.

1 60. (Currently Amended) The method of claim 2928 wherein:  
2 providing a first semiconductor structure having first and second opposing  
1 surfaces comprises providing a first semiconductor structure having a face surface and a  
2 backside surface; and  
3 disposing a laminate layer comprises disposing a laminate layer over the face of the first  
4 semiconductor structure to provide a semiconductor structure having a laminate layer disposed  
5 thereon.

1 61. (Currently Amended) The method of claim 32 wherein:  
2 providing a second semiconductor structure comprises providing a second ~~thin film~~  
3 semiconductor structure; and  
4 aligning a first surface of the semiconductor-handle complex with a first surface of the  
5 second semiconductor structure comprises aligning the backside of the semiconductor-handle  
6 complex with a face of the second ~~thin film~~ semiconductor structure.

1 62. (Currently Amended) The method of claim 294 wherein:  
2 the first semiconductor structure corresponds to an original semiconductor substrate;  
3 the first semiconductor-handle complex having a substrate portion corresponds to an  
4 original-handle complex having a substrate portion; and

5        ~~the handle semiconductor complex corresponds to a handle thin film complex;~~  
6        the second semiconductor structure corresponds to a second substrate.

1    63. (Currently Amended)    The method of claim 62 wherein:  
2        the original semiconductor substrate corresponds to a first ~~thin film~~ substrate and the  
3    second substrate corresponds to a second ~~thin film~~ substrate.

64. (cancelled).

65. (cancelled).

1    66. (Previously Presented)    A multi-layer semiconductor structure comprising:  
2        a first semiconductor structure having first and second opposing surfaces; and  
3        a laminate layer over one of the first and second opposing surfaces of the first  
4    semiconductor structure to provide a first semiconductor structure having a laminate layer  
5    disposed thereon.

1    67. (Previously Presented)    The structure of claim 66 further comprising a handle member  
2    disposed over the laminate layer.

1    68. (Previously Presented)    The structure of claim 66 further comprising a substrate disposed  
2    on a second one of the first and second opposing surfaces of the first semiconductor structure.

1    69. (Previously Presented)    The structure of claim 66 wherein the first semiconductor  
2    structure comprises a plurality of thin film semiconductor layers.

1    70. (Previously Presented)    The structure of claim 67 further comprising a film layer disposed  
2    over at least one surface of the handle member.

1    71. (Previously Presented)    The structure of claim 70 wherein the film layer is provided from  
2    one of: silicon nitride; and silicon dioxide.

1 72. (Currently Amended) The structure of claim ~~6770~~ further comprising a laminate disposed  
2 over a surface of the handle member.

1 73. (Previously Presented) The structure of claim 66 wherein said laminate layer comprises:  
2 a first layer corresponding to a release layer;  
3 a second layer corresponding to a metal adhesion / diffusion barrier layer; and  
4 a third layer corresponding to a fusion layer.

1 74. (Previously Presented) The structure of claim 73 wherein the release layer comprises at  
2 least one of zirconium and aluminum.

1 75. (Previously Presented) The structure of claim 74 wherein the metal adhesion / diffusion  
2 barrier layer comprises tantalum.

1 76. (Previously Presented) The structure of claim 75 wherein the fusion layer comprises at  
2 least one of copper; a polymer; and an inorganic dielectric.

1 77. (Previously Presented) The structure of claim 66 wherein said laminate layer comprises:  
2 a first layer corresponding to a metal adhesion / diffusion barrier layer;  
3 a second layer corresponding to a release layer; and  
4 a third layer corresponding to a fusion layer.

1 78. (Previously Presented) The structure of claim 77 wherein the release layer comprises at  
2 least one of zirconium and aluminum.

1 79. (Previously Presented) The structure of claim 78 wherein the metal adhesion / diffusion  
2 barrier layer comprises tantalum.

1 80. (Previously Presented) The structure of claim 79 wherein the fusion layer comprises at  
2 least one of copper; a polymer; and an inorganic dielectric.

1 81. (Previously Presented) The structure of claim 66 wherein said laminate layer comprises  
2 two layers with a first one of the layers corresponding to a release layer and second one of the  
3 layers corresponding to one of:

4 a polymer having an adhesive characteristic which allows the laminate layer to adhere to  
5 the surface of the thin film semiconductor structure;

6 an inorganic material; and

7 copper.

1 82. (Previously Presented) The structure of claim 66 wherein said laminate layer comprises a  
2 single layer having an adhesive characteristic which allows the laminate layer to adhere to the  
3 surface of the semiconductor structure and having a characteristic such that the layer releases  
4 from the surface of the semiconductor structure in response to being exposed to a release agent.

1 83. (Previously Presented) The structure of claim 66 wherein the semiconductor structure  
2 corresponds to a die-to-die semiconductor structure.

1 84. (Previously Presented) The structure of claim 66 wherein the semiconductor structure  
2 corresponds to a die-to-wafer semiconductor structure.

1 85. (Previously Presented) The structure of claim 66 wherein the semiconductor structure  
2 corresponds to a wafer-to-wafer semiconductor structure.

1 86. (Currently Amended) The structure of claim ~~67~~66 wherein a portion of the substrate from  
2 the second one of the first and second opposing surfaces of the first semiconductor structure and  
3 the handle member provide a semiconductor-handle complex and wherein the structure further  
4 comprises:

5 a second semiconductor structure corresponding to a second ~~thin film~~ semiconductor  
6 structure disposed over a first surface of the semiconductor-handle complex with a first surface  
7 of the second ~~thin film~~ semiconductor structure aligned with a backside of the semiconductor-  
8 handle complex.



1 87. (Currently Amended) The structure of claim 86 wherein:  
2 the first semiconductor structure corresponds to an original semiconductor substrate;  
3 the first semiconductor-handle complex having a substrate portion corresponds to an  
4 original-handle complex having a substrate portion;  
5 ~~the handle-semiconductor complex corresponds to a handle-thin film complex; and~~  
6 the second semiconductor structure corresponds to a second substrate.

1 88. (Previously Presented) The structure of claim 87 wherein the original semiconductor  
2 substrate corresponds to a first thin-film substrate.